NEWS REPORT

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Accademia Nazionale dei Lincei *

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THE Accademia Nazionale dei Lincei originated in Rome in a scientific pact signed by four young men on August 17, 1603. These men were Federico Cesi, who called himself "the acknowledged head and founder," and was the son of the first Duke of Aquasparta; Giovanni Heck from Deventer, Holland, who was working for a medical degree in Perugia; Francesco Stelluti from Fabriano, a doctor of science and an outstanding Persian scholar; and Count Anastasio de Filiis, a native of Terni and a cousin of Cesi. At the time all four were only slightly over 20 years old.

Spurred on by their scientific zeal and enthusiasm for the Galilean type of experimentation, these young scientists wished to probe the secrets of nature with the eyes of a lynx, as they put it. So they adopted the name Lincei (lynxes) and the lynx as the emblem of their society. The airs of mystery with which these young men liked to surround themselves and the general character of their studies generated suspicion and hostility, so that the small association had to struggle to keep alive.

The *Lynceographum*, their original constitution written by Cesi in 1605, outlined a program of serious and obligatory activities comprising mainly studies in the natural and mathematical sciences but did not neglect either literature or philosophy. In 1624 it was incorporated in the *Praescriptiones Academiae Lynceorum*.

However, the infant Academy only survived until 1630, when its head, and the soul of the whole association, died at the age of 45. In spite of the efforts of his successors who were devoted to Cesi's memory and principles, the Academy ceased to exist. The hostile atmosphere that surrounded it was the principal obstacle to its survival, but its fame had been established and its noble scientific tradition remained alive.

In this first period the rosters of the Academy were graced by the illustrious names of such great scientists as Giambattista della Porta and the even more famous Galileo Galilei. Other men of learning—scientists, poets, jurists, and philologists, Italian as well as foreign—were gradually added until by 1625 they numbered thirty-two. The Academy's brief series of publications was equally famous. We find among them Galileo's correspondence on solar spots (1613) and his *Il Saggiatore* (1622),

* This article constitutes the first in a series on national academies of the world. The original manuscript was prepared by the author in his native Italian. It is hoped that the English translation is faithful to the original.—Editor.

a jewel of polemical prose; as well as the opening portion of the *Tesoro Messico,* an illustrated album of the flora and fauna of Mexico, which had been completed about 1630 and was published in 1651. However, the greatest value of the Academy was that it helped spread abroad the idea of scientific collaboration which later inspired the formation of the major European and American academies.

Thanks to Giovanni Paolo Simone Bianchi, a naturalist and antiquarian of Rimini, the famous Accademia dei Lincei was revived in 1745 in Rimini where it was active for a short period. In 1795, it was reopened again in Rome in the palace of Francesco Caetani, the Duke of Sermoneta, under the name, *Nuovi Lincei* (new lynxes). By 1801 the name was changed back to *Lincei.* At the time its secretary was the Rev. Feliciano Scarpellini, who insisted upon calling himself "restitutor Lynceorum," and before his death he made the Academy a private institution. Unfortunately, these revivals were of short duration and merely managed to prove the tenacity of the fame and tradition of the old Academy. In spite of successive periods of florescence and decadence in which political events played a definite role, the Academy was suppressed by Pope Gregory XVI in 1840. Pope Pius IX reinstated it once more in 1847 but under the name of Accademia Pontifica dei Nuovi Lincei (Pontifical Academy of the New Lynxes).

When Rome was established as the capital of Italy, the Academy became the Reale Accademia del Lincei (Royal Academy of Lynxes), and under Quintino Sella, who managed its destinies from December 9, 1871, until his death in 1884, it reached the most illustrious period of its existence.

The constitution of February 14, 1875, established the government and administration of the Academy and, following certain principles contained in the original *Praescriptiones* of 1624, made various reforms. For example, a class of moral science, history, and philology was added to the class of physical and mathematical sciences. The new class included 30 national members, whereas 40 were assigned to the old class. Both were permitted to have 10 foreign members each and 60 corresponding members.

The Academy continued to reside in the Palazzo Capitolino which it had occupied since 1825. However, in 1883, the Italian Government bought the Palazzo Corsini, a beautiful 18th century palace built by the architect Ferdinando Fuga, for the Academy and this became its permanent home.

Other changes followed with respect to the number of members, the electoral procedure, the expansion of the sciences included within the framework of the Academy, and the division of the classes into various categories. Within the years 1920 to 1925, the Accademia dei Lincei became officially what it actually already was, namely a national academy.

Under the Fascist regime, the Accademia Nazionale dei Lincei entered a critical period of its life, because it had achieved a high degree of autonomy and independence in cultural matters. For reasons of state an Accademia d'Italia was founded whose president and vice president were appointed personally by the head of the government. Increasingly restrictive measures were applied to the Accademia Nazionale dei Lincei, until finally on June 8, 1939, it was merged with the Accademia d'Italia. This merger amounted to virtual abolition of the Lincei.

With the fall of the Fascists in 1943, Benedetto Croce advocated the reconstruction of the Accademia Nazionale dei Lincei and the liquidation of the Accademia d'Italia. On September 28, 1944, by two legal decrees the Accademia Nazionale dei Lincei was restored and the Accademia d'Italia abolished. Until the presidential office of the Academy was reestablished in 1946, the Academy was managed by a commissioner. The reorganization of the scientific program was in the hands of a committee composed of former members of the Academy with Benedetto Croce as the first chairman. In 1945, new members were elected and a new category—appreciation of arts and letters—was added.

At the present time the Academy consists of two classes—the physical, mathematical, and natural sciences, and the moral, historical, and philological sciences. The first is divided into five categories, each

of which is subdivided into various sections as follows: *1*) mathematics and mechanics, pure and applied; 2) astronomy, geodesy, and geophysics, pure and applied; 3) physics and chemistry, pure and applied; *4*) geology, paleontology, and mineralogy, pure and applied; and 5) biological sciences, pure and applied. The second class is divided into seven categories: *1*) philology and linguistics; *2*) archeology; 3) the appreciation of art and poetry; *4*) history and historical and anthropological geography; 5) philosophical sciences; *6*) jurisprudence; and 7) social and political sciences. The Academy has 72 national members, 72 corresponding members, and 72 foreign members.

The President of the Academy is assisted by a Presidential Council composed of Francesco Giordani, Vice President; Dante de Blasi and Ugo Amaldi, Secretaries of the class of physical sciences; Roberto Almagià and Giuseppe Lugli, Secretaries of the class of moral sciences; and Giuseppe Cardinali and Mauro Picone, Administrators. The President of the Academy also presides over the Unione Accademica Nazionale.

The Academy has been able to renew its widespread relations not only with the major scientific institutions of Italy, but also with those throughout the world. It has cooperated with the national academies of San Luca and Santa Cecilia especially in the promotion of important programs on the organization of scientific work and cultural matters and will continue to do so. In addition it exchanges information and publications with a number of Italian academies such as the Accademia Gioenia di Scienze Naturali of Catania, the Accademia della Crusca in Florence, the Accademia di Scienze in Turin, the Accademia di Scienze e Lettere in Genoa, the Accademia di Scienze e Lettere in Venice, etc. Close contacts are also maintained with the principal universities; various research institutes; the mathematical, medical and surgical, scientific, literary, archeological and artistic institutes of different cities; with astrophysical observatories, botanical gardens, and state schools of higher education; with the principal libraries; with the historical societies of various provinces, historical archives, and major museums; and with the more important scientific, literary, juridical, and historical periodicals.

The Academy also collaborates in the preparation of international scientific publications. Its members have helped edit the *Thesaurus Linguae Latinae,* printed in Leipzig, Munich, Vienna, etc., and the *Encyclopedia of Islam,* printed in Leyden. In addition, the Academy is a member of the International Union of Academies and cooperates with the various institutions that belong to it.

The activity of the Academy is manifested by its interest and participation in congresses and conventions as well as in various programs, both national and international in scope, which it either organizes directly or in which it participates. Among the most important of these activities are the Volta Conventions held every two years at which a large group of scientists from all over the world meet and discuss various scientific problems. The topics of the last two conventions were "The European Revolution of 1848" and "The Problem of Sun Spots."

The staggering number of regular and special publications issued by the Academy include the *Rendiconti* and *Memorie* of the two classes, the *Quaderni,* the *Notizie degli Scavi di Antichita,* the *Monumenti Antichi,* the *Atti* of the Italian Constitutional Assemblies; various Greek and Latin classics, the Italian monuments, a complete edition of the works of the famous mathematicians Tullio Levi Civita and Vito Volterra, and the *Glossa* of Accursio. The Academy mails its publications to some 250 Italian institutions and to all major foreign institutions on an exchange basis.

The Academy awards prizes for excellence in the various fields included in its organization and administers scholarship funds from private sources. Four prizes of one million Italian lire each are awarded annually by the Academy for works or discoveries made by Italian scientists and scholars. These prizes were created by Luigi Einaudi, President of the Republic, who has generously provided the necessary funds during the seven years of his encumbency. Two of them are awarded by the class of the physical, mathematical, and natural sciences, and two by the class of

the moral, historical, and philological sciences.

Four prizes of 250,000 lire each are awarded alternately to high school teachers of the subjects falling under the class of physical, mathematical, and natural sciences, and under the class of the moral, historical, and philological sciences.

The Feltrinelli prizes, international in character, amounting to one or more million lire each and totalling approximately twenty million lire a year, are conferred for outstanding achievements in the fields of science or literature. The prizes were created by the A. Feltrinelli Foundation in accordance with the will of the late Dr. Antonio Feltrinelli, and are considered today to be one of the most coveted marks of recognition that any scientist, writer, or artist might receive. The Foundation periodically also makes an award for exceptional achievements of outstanding moral and humanitarian value.

The Academy also awards scholarships for study and special training and makes special grants and contributions that amount to approximately ten million lire annually. These awards were made possible by the generosity of the Guido Donegani Foundation established within the Academy in memory of the late engineer Guido Donegani. The Foundation itself was created by funds placed at the disposition of the Academy by the Montecatini Company. In accordance with the will of the testator, the aim of the Foundation is to promote chemical research.

The Accademia Nazionale dei Lincei also has a very valuable library divided into three sections—The Corsinian, the Academic, and the Oriental. It collects rare manuscripts, first editions, and various rare texts and is considered to possess one of the finest Italian collections of periodicals of scientific societies.

The Corsinian section has 3,128 manuscripts, 2,288 first editions (the oldest dating back to 1459), 7,558 sixteenth century editions, and 34,659 volumes most of which were printed in the seventeenth and eighteenth centuries. It includes illuminated books, Aldine, Elzevir, Comini, and Bodoni editions, and numerous classical books of great value. Some of these are cameo, Maioli, and fanfare editions.

The Academic section consists of various collections, such as the Lovatelli-Caetani collection of archaeological and literary material; the Susca collection of a miscellaneous character but largely juridical; the Puccioni collection which is composed of a conspicuous number of D'Annunzio's works and works about him; the Mussolini collection filled with dedicated copies often printed on special paper and with rich, artistic bindings; the Pascarella collection of artistic, literary, and historical materials mainly dealing with the Italian Risorgimento; the La Mantia collection of juridical, historical, and literary works; the Levi Civita collection of books on pure and applied mathematics and a large miscellaneous assortment; the Conti Rossini collection predominantly oriental in nature with special reference to Ethiopian and African studies. The section contains 230 manuscripts, 81 of which are musical, 157,500 printed volumes, 106,100 pamphlets, 250 unbound parchments, and 10,705 unbound letters and documents. Of outstanding interest are the 364 letters written by Giuseppe Verdi to the lawyer, Pietro Piroli, and the numerous papers that constitute the archives of Graziadio Isaia Ascoli.

The Oriental section, or Caetani Foundation for Moslem Studies as it is also called, contains 250 original manuscripts, 88 photographic reproductions, and around 1,900 printed volumes.

Some Problems of Cancer Diagnosis and Therapy

ISABEL M. WASON

Executive Secretary, Committee on Cancer Diagnosis and Therapy

THE numerous proposals advanced for the diagnosis and treatment of cancer have caused widespread and grave concern. Recognizing the need for a central source of information on such matters, the Chairman of the National Research Council appointed a Committee on Cancer Diagnosis and Therapy to evaluate the efficacy of various measures proposed and to provide information, advice, and opinions to organizations concerned with these problems. This action on the part of the National Research Council was taken in response to a request from the American Association for Cancer Research, American Cancer Society, American Medical Association, Damon Runyon Memorial Fund, Food and Drug Administration, and the National Cancer Institute. The Committee held its first meeting on February 1, 1951, under the chairmanship of Dr. Ira T. Nathanson of Harvard University.

In accepting responsibility for this new activity, the National Research Council and the Committee were guided by an appreciation of social as well as scientific obligations. The emotional attitude of the public toward cancer in recent years has made it both difficult and necessary to attain an objective viewpoint. Press and radio reports of a new treatment for cancer often receive sympathetic attention from the general public, and particularly from anxious patients who naturally seek relief from the disease, but the conscientious practicing physician will seldom employ or advise the use of such therapy until scientific evidence has been accumulated by informed investigators. Nevertheless, a claim that is made known through nonprofessional channels may have value, and the thought that a useful agent or clue might be unrecognized because of its unorthodox presentation has disturbed many people. It was agreed therefore that the Committee, although interested in all measures related to cancer diagnosis and therapy, would be concerned chiefly with proposals which were not being otherwise evaluated but which either showed scientific promise or had caught the ear of the public.

The Committee considered carefully the nature of the task, the number and variety of the methods proposed for the diagnosis and therapy of cancer, and the scientific, psychological, and legal problems. Advice was sought from the legal counsel of the Academy, both as a protection to all who might participate in the investigations and for guidance in drafting procedures, records and reports. Each step has been carefully debated and tested during the early studies and, in consequence, progress has often seemed slow.

In thirty months the Committee has developed and drafted policies, procedures, and criteria, has assembled a large amount of information, and has accepted six requests to evaluate specific methods. Two studies have been completed; in one of these, an opinion was written, and in the second, since it was not possible to complete all phases of the investigation, a report was drafted outlining the steps taken, the factual data, and those conclusions which could be based on the available evidence. Two inquiries have reached the stage of clinical trials. A fifth was tabled because of efficient action by a local medical society, and the sixth still awaits the provision of basic information by the proponent. Whether it will be possible to complete many of the necessary clinical

and other studies and to evaluate a significant number of procedures is still unknown.

Although widespread concern about the disease is a recent development, descriptions of it are given in ancient medical literature. The generic term, cancer, was originally applied to chronic swellings and growths due to various causes. The types of treatment used in earlier centuries were numerous and included superficial excisions as well as a variety of herbal brews and caustic ointments. Tissue destruction following local medications doubtless removed some external or easily accessible tumors. Folklore remedies still perpetuate a number of the earlier medical practices.

The emergence of the microscope as a diagnostic tool nearly a century ago made possible not only the discovery of etiologic agents but, more important, the interpretation of tissue patterns in disease. Gradually, masses due to inflammation, scarring, and other tissue changes were recognized and reclassified. However, there still remains a large, heterogeneous group of "tumors" which vary in appearance, in metabolism, and in their effects on patients. At one end of the spectrum are the benign tumors which are local, sometimes multiple, and relatively slow-growing. At the other are the malignant growths, which tend to grow rapidly, invade adjacent tissues, and spread to distant areas by cell transplantation through blood or lymph channels; these neoplasms are usually termed cancer. The intermediate zone contains tumors which are more variable and less clearly defined.

Cancer is an exceedingly variable disease not only in its rate of growth, its tendency to spread to distant tissues, and the multiplicity of symptoms which may be present, but also in the duration of life even in untreated cases. Great differences in individual susceptibility to pain and in reaction to both drugs and psychological factors further complicate the picture. Subjective response to therapy, as shown by loss of pain, improved appetite with resultant gain in weight, increase in the sense of well-being and in activity, is very important to the patient and family, and is fully appreciated by physicians. However, it is not generally recognized that such improvement in symptoms may occur while cancer is actually progressing, and that a type of therapy may give added comfort to the patient but have little or no influence on the natural course of the disease.

Interest in cancer and efforts to discover more effective methods for early diagnosis and for treatment of the disease have been intensified during recent years. The lengthened span of life permits more individuals to reach the fourth and later decades when cancer is more prone to develop. The publicity connected with educational and fund-raising activities, together with the increased public and private funds now available for research and for the care of cancer patients, have made the public more conscious of the problem; and, at the same time, discoveries of the newer antibiotic, hormonal, and other therapeutic agents have prolonged and saved lives threatened by many other diseases and have excited optimism that comparable "miracle drugs" for conquering cancer may soon be found. The search for these continues by physicians and laymen alike.

Proposals for the diagnosis and therapy of cancer may be grouped into three general categories. The first comprises measures presented by scientific investigators in professional publications. Data on the composition of agents, directions for usage, and observations on results are given, and further details will be provided in answer to inquiries. If the procedure offers promise, it will be evaluated by trials in recognized institutions. The second includes folklore remedies which seldom attain more than local prominence. In the cases cited by proponents, the basis for the diagnosis of the disease is often obscure and records lack other significant detail. Many ingredients of such products have been subjected to experimental or clinical study, with little or no beneficial effect. The third category consists of proposals for which the scientific evidence is inadequate or conflicting. These may be advocated by physicians or laymen, but frequently press and radio, rather than professional journals, bring first news of the "discovery," and secrecy shrouds the nature of the agents and the methods for their usage. To a physician familiar with the variable course of neoplasms, the proffered testimonials and re-

ports may not be convincing; but hope awakens for cancer patients and their families who will grasp at any straw which may offer a chance of escape from the dread disease.

The Committee is concerned primarily with proposals in the third category. Since it is manifestly impossible to evaluate more than a few of the many claims advanced, requests are accepted only from the sponsoring agencies and Committee members. There has appeared to be more urgent need for advice on therapeutic than on diagnostic measures, but each decision to investigate a specific procedure is based on considerations of public welfare and clinical significance. Initiation of a study depends on securing from the proponent his data, claims, directives, and evidence, although supplementary information is collected from other sources. The willingness of proponents to furnish information and materials has varied greatly. Important details and precise directions have frequently been withheld; stipulations and qualifications have raised a succession of barriers and caused frustrating delays. Whether to follow an expedient course by acquiescing to a proponent's wishes or to adhere strictly to accepted scientific procedures has been a constantly recurring problem.

Objective evidence is emphasized in the Committee's criteria for evaluating data. For diagnosis, verified histologic tissue examination is a requisite. Criteria for assessment of therapeutic response stress the importance of group response as opposed to apparent benefits in isolated cases and the value of tumor regression in contrast to symptomatic relief. Clinical trials should be limited to cases which are considered unamenable to the usual types of therapy and should give preference to neoplasms whose progress can be followed by visual, palpable, or other methods of observation. The great variability of human cancer makes control studies difficult.

The actual efficacy of a therapeutic agent for human cancer can be determined only by administering it to patients with the disease and observing its effect on neoplasms. Such clinical studies should be conducted by physicians experienced in cancer therapy, in neutral institutions, and in accordance with explicit directives provided by the proponent. It is highly desirable that there be two or more independent trials of each procedure.

A number of clinical investigators, skilled in the evaluation of therapeutic agents for cancer, have agreed to assist the Committee by conducting such trials, and it is anticipated that other men will also recognize the need and the social responsibility of the profession for such studies. Available information on the agents and their usage is provided by the Committee. The criteria to be employed and the study plan should be acceptable to the investigators, the proponent, and the Committee. In several inquiries already initiated, the proponent's request that he be allowed to take part in clinical trials or to know the names of investigators has been granted, but with the proviso that participants would make independent observations of therapeutic response. Recently a policy has been adopted that clinical studies shall be conducted by independent investigators whose identity will not be revealed.

Investigation of measures proposed for the diagnosis and treatment of cancer is a responsibility that is shared by the Committee, the medical profession, and the organizations which are entrusted with public and private funds for study of the disease or the care of cancer patients. New proposals, particularly for therapy, will continue to appear. The Committee will direct its efforts not only toward accumulating information on methods which are not well documented and evaluating measures which merit further study, but also toward averting the premature release of publicity which too often holds out false promises to cancer patients and their families. Always present is a ray of hope that the studies may uncover valuable clues leading to improved methods for the diagnosis and treatment of cancer.

SCIENCE NEWS

AUTUMN MEETING NATIONAL ACADEMY OF SCIENCES

The autumn meeting of the National Academy of Sciences will be held at the Massachusetts Institute of Technology, Cambridge, Mass., November 9–11. Four half-day sessions will be devoted to the presentation of scientific papers. A symposium on a subject in the biological sciences has been planned for Tuesday morning, November 10, and another on solid state and chemical problems for Wednesday morning, November 11. The business meeting of the Academy for members only has been scheduled for Monday afternoon, November 9.

Harlow Shapley, Director of Harvard College Observatory, and George R. Harrison, Dean of Science, Massachusetts Institute of Technology, will deliver the public lecture on Monday evening in Huntington Hall. The subject chosen by the two speakers is the production and use of solar energy.

Karl T. Compton, Chairman of the Corporation, Massachusetts Institute of Technology, is Chairman of the Committee on Arrangements. The other members of the Committee are A. C. Cope, J. C. Hunsaker, F. O. Schmitt, J. C. Slater, C. R. Soderberg, and J. A. Stratton, all of the Massachusetts Institute of Technology. Detlev W. Bronk, President, and Alexander Wetmore, Home Secretary, are serving as *ex officio* members of the Committee.

FRED. E. WRIGHT

On August 25, Fred[erick] E[ugene] Wright, Home Secretary of the National Academy of Sciences from 1931 through 1951, passed away at his summer home on Sagastaweka Island in Ontario, Canada. His death came as a shock to his many friends.

Since his election to the Academy in 1923, Dr. Wright served on numerous important committees and as Vice President of the Academy from 1927 through 1931. During his twenty years as Home Secretary, many improvements were made in the program and presentation of papers at Academy meetings. He gave meticulous care to the handling of Academy details and came to know most of the members well.

Dr. Wright received his doctorate in geology from the University of Heidelberg, Germany, in 1900. Six years later he joined the staff of the Geophysical Laboratory of the Carnegie Institution of Washington where he remained until his retirement in 1944. His early researches and publications in the field of physical crystallography and petrology stimulated the use of the petrographic microscope in the United States and its present wide application in mineralogy and related fields of science. During the first World War while serving as a Major in the Ordnance Department of the Army, he contributed extensively to the development of optical glass. In World War II he served as Civilian Adviser to the Joint Optics Committee of the Army and Navy Munitions Board. He helped establish an effective expansion program for the production of critically needed optical glass for urgent military needs. For his fine work the Army awarded him the Gold Medal for Exceptional Civilian Service.

As Chairman of the Carnegie Institution's Committee on the Study of the Surface of the Moon, Dr. Wright spent many summers in residence at Mt. Wilson Observatory. His measurements on the polarization of light from materials on the moon's surface were the first to indicate the kinds of minerals found there.

Dr. Wright's interest in scientific societies is best illustrated by his numerous elections to membership and willingness to serve them in official capacities. He was a member of the American Academy of Arts and

Sciences, the American Philosophical Society, Geological Society of America (Vice President, 1942), Optical Society of America (President, 1918–20), Mineralogical Society of America (President, 1941), Geological Society of Washington, D. C. (President, 1924), to mention only some of the organizations. He was also a foreign fellow of the Geological Society of London and a member of the Mineralogical Society of London and the Physical Society of London. One of the last honors he received was the Washington A. Roebling Medal from the Mineralogical Society of America in 1952.

Fred. Wright will long be remembered for his faithful service to science and to the Academy and for his friendly personality, which won him many friends in Washington and throughout the world.

NUCLEAR DATA PROJECT

In accordance with provisions of a contract with the Atomic Energy Commission, the National Academy of Sciences–National Research Council has established a project on nuclear data. This project has been undertaken upon the recommendation of the Committee on Tables of Constants and Numerical Data, of which A. V. Astin, Director of the National Bureau of Standards, is the Chairman. The Committee is sponsored jointly by the Division of Chemistry and Chemical Technology and the Division of Physical Sciences.

Work on this type of project was first initiated about six years ago at the Oak Ridge National Laboratory. Later similar work was undertaken on a substantially expanded basis at the National Bureau of Standards. In 1950 the Bureau published Circular 499 entitled *Nuclear Data*. Subsequently additional data have been assembled in preparation for an eventual revision of this Circular. Since January 1, 1952, new nuclear data assembled by the Nuclear Project Group at the Bureau have been published regularly in the Atomic Energy Commission journal, *Nuclear Science Abstracts*.

Transfer of this project from the National Bureau of Standards to the National Academy–Research Council will not terminate the Bureau's interest in the activity. The Bureau will continue to contribute to the project and will work closely with the new group.

Katherine Way, who has been in charge of the project since 1949, has been appointed Director. She will be assisted by a technical staff consisting of Carl L. McGinniss, Richard King, and Marion Wood, all of whom have been associated with the project at the National Bureau of Standards. The program for the immediate future will include revision of Circular 499, continued publication of lists of new nuclear data in *Nuclear Science Abstracts*, and analytical studies of nuclear data with a view to publishing results in appropriate scientific journals.

DIVISION OF BIOLOGY AND AGRICULTURE

Frank L. Campbell has been appointed Executive Secretary of the Division of Biology and Agriculture and Executive Director of the American Institute of Biological Sciences. He assumed his new duties on September 1, succeeding Samuel L. Meyer who has returned to Florida State University as head of the Department of Botany.

Dr. Campbell received his Sc.D. degree in entomology from Harvard University in 1926. After working in the U. S. Bureau of Entomology and Plant Quarantine for ten years, he joined the staff of Ohio State University as associate professor of entomology, becoming a full professor in 1940. He was Editor of *The Scientific Monthly* from 1943 to 1948 when he was appointed Assistant to the Administrator, Agricultural Research Administration, U. S. Department of Agriculture.

Hiden T. Cox, associate professor of botany at Virginia Polytechnic Institute, has been appointed Deputy Executive Director of the American Institute of Biological Sciences. Dr. Cox assumed his new duties on July 1. He received his Ph.D. degree in botany from the University of North Carolina in 1947 and has been a member of the staff of Virginia Polytechnic Institute since 1949.

DIVISION OF EARTH SCIENCES

Richard Joel Russell, professor of geography and Dean of the Graduate School of Louisiana State University, has been appointed Vice-Chairman and Chairman-Designate of the recently established Division of Earth Sciences. Dr. Russell will serve with Francis Birch, Chairman, and Ernst Cloos, Past-Chairman of the Division (see NEWS REPORT, Vol. III, No. 4).

Dr. Russell received his Ph.D. degree in structural geology from the University of California in 1926. He is well-known for his work in geomorphology and climatology and is particularly interested in streams and deltas of the alluvial valleys and coastal regions. He was President of the Association of American Geographers in 1948 and recently concluded a three-year term on the Council of the Geological Society of America. Dr. Russell is also serving currently on the Earth Science panel of the National Science Foundation.

The following members of the Division have been appointed to serve with the three Chairmen on the Executive Committee: John N. Adkins, Office of Naval Research, representing the Seismological Society; Preston E. Cloud, Jr., U. S. Geological Survey, representing the Paleontological Society; James Gilluly, U. S. Geological Survey, member-at-large; Harry H. Hess, Princeton University, representing the American Geophysical Union; Charles B. Hitchcock, American Geographical Society, representing the Society; and H. R. Gault, Executive Secretary of the Division of Earth Sciences, *ex officio*.

Charles B. Hunt was appointed Executive Director of the American Geological Institute and assumed his new duties on September 1. Formerly chief of the General Geology Branch, U. S. Geological Survey, Denver, Mr. Hunt succeeded Robert W. Webb who has returned to Santa Barbara College of the University of California as professor of geology.

FELLOWSHIP PROGRAMS

FELLOWSHIPS IN THE MEDICAL AND NATURAL SCIENCES

The National Academy of Sciences–National Research Council is accepting applications for fellowships that provide opportunities for advanced study and training in fundamental research in the medical and natural sciences for the 1954–55 academic year. These fellowships are intended for young men and women of unusual promise and ability, in the early stages of preparation for an investigative career, and not for those already professionally established. A brief description of each of the nine fellowship programs is given below:

Fellowships in Cancer Research, awarded by the American Cancer Society upon the recommendation of the Committee on Growth of the Division of Medical Sciences, are available for study in all branches of the biological, chemical, and physical sciences and of clinical investigation applicable to the study of growth, typical or malignant. Citizens of the United States are eligible.

British-American Exchange Fellowships in Cancer Research, awarded by the American Cancer Society upon recommendation by the Committee on Growth, are offered to citizens of the United States for advanced study in Great Britain in specialized fields pertaining to the problem of cancer. Similar fellowships are awarded by the British Empire Cancer Campaign to young British scientists for research in the United States.

Fellowships in the Medical Sciences, supported by the Rockefeller Foundation and by the Lilly Research Laboratories, are administered by the Medical Fellowship Board of the Division. Fellows are expected to devote themselves to research in the basic medical sciences. The Rocke-

feller Fellowships are open to citizens of the United States and Canada; the Lilly Fellowships only to citizens of the United States.

Fellowships in Tuberculosis are also administered by the Medical Fellowship Board under a grant from the National Tuberculosis Association. These awards are designed to promote the development of investigators in fields related to tuberculosis. They are open to citizens of the United States who are graduates of American schools.

Fellowships in Radiological Research are administered by the Division's Committee on Radiology for the James Picker Foundation. The Foundation has expressed particular interest in the support of candidates who propose to carry on research oriented toward the diagnostic aspects of radiology. Appointments are not limited to citizens of the United States.

Lilly Research Laboratories Postdoctoral Fellowships in the Natural Sciences are available in those sciences fundamental to the understanding of biological phenomena, especially in the borderline fields between chemistry, biology and physics. Applicants must produce evidence of training in one of the natural sciences equivalent to that represented by the Ph.D. or Sc.D. degree and must have demonstrated superior ability for creative research. A fellowship applicant must choose an institution other than the one at which he has had most of his academic training. These fellowships are open only to citizens of the United States.

Merck Senior Postdoctoral Fellowships in the Natural Sciences are awarded for the purpose of giving advanced education, training, and development to individuals who have demonstrated marked ability in research in the physical, chemical, or biological sciences and who wish to broaden their fields of investigational activity by acquiring some familiarity with another area. A fellowship applicant must choose an institution other than the one at which he has had most of his academic training. Applicants must produce evidence of training in physics, chemistry, biology or preclinical medical sciences, equivalent to that represented by the Ph.D. degree, and must have had at least three years of postdoctoral professional experience in their major field, only one of which may have been fellowship work. These fellowships, with no age restriction, are open only to citizens of the United States.

National Research Council Postdoctoral Fellowships in the Natural Sciences, supported by the Rockefeller Foundation, are intended to promote the training of investigators in basic research in the natural sciences, primarily in educational and research institutions of the United States, and in exceptional cases in institutions abroad. These fellowships are open to citizens of the United States and Canada. A fellowship applicant must choose an institution other than that at which he has had most of his academic training. Fellowships are available in the fields of agriculture, anthropology, astronomy, biochemistry, biophysics, botany, chemistry, forestry, geography, geology, geophysics, mathematics, paleontology, physical geography, physics, psychology and zoology.

Radio Corporation of America Predoctoral Fellowships in Electronics are offered to give special graduate training and experience to young men and women in the general field of electronics, either as a branch of electrical engineering or as a part of the general field of physics. Applicants must have demonstrated ability and aptitude for advanced work and must have had training in electronics equivalent to that represented by one year beyond the bachelor's degree in a university of recognized merit in this field. It is understood that the training for the bachelor's degree may come from the general area of electrical engineering or physics. Applicants must be citizens of the United States and fellowships will be awarded only for study and research in the United States.

Applications for 1954–55 under any of the above programs must be postmarked on or before December 10, 1953. Fellowships are awarded in the late winter or early spring. Complete details and application blanks may be obtained from the Fellowship Office, National Research Council, 2101 Constitution Avenue, N. W., Washington 25, D. C.

NATIONAL SCIENCE FOUNDATION FELLOWSHIPS

The Fellowship Office of the National Academy of Sciences–National Research Council is accepting applications for National Science Foundation Fellowships for the 1954–55 academic year. These fellowships, open only to citizens of the United States, will be awarded solely on the basis of ability in the mathematical, physical, medical, biological, and engineering sciences including physical anthropology, psychology (excluding clinical psychology), physical geography, and interdisciplinary fields. No awards are made to individuals studying for the M.D. degree; however, applications will be accepted from individuals holding the M.D. degree who intend to obtain advanced training in one of the medical sciences directed toward a career in research.

National Science Foundation Fellowships are available to any citizen of the United States who has demonstrated ability and special aptitude for advanced training in the sciences and who meets the requirements of one of the following categories of awards:

First Year Fellowships: Awards in this category will be made to students entering graduate school for the first time or those who will have completed less than one normal year of graduate study, as of the beginning of the tenure of their fellowships. College seniors who expect to receive a baccalaureate degree during the 1953–54 academic year and other individuals who can produce evidence that they are acceptable as regular graduate students in an accredited non-profit institution of higher learning are eligible for such first year fellowships.

Intermediate Fellowships: Awards in this category will be made to students who will have completed, as of the beginning of their fellowships, an amount of graduate training considered by the institution at which they are in attendance to be a normal year of graduate study, but who will require more than one additional year to complete the requirements for a doctoral degree.

Terminal Year Fellowships: Awards in this category will be made to students who expect to complete the requirements for a doctoral degree within one calendar year from the date on which they enter on the tenure of their fellowships.

Postdoctoral Fellowships: Awards in this category will be made to individuals who, as of the beginning of the tenure of their fellowships, have received a doctoral degree or can produce evidence of training in a field of science equivalent to the training represented by a doctoral degree in science.

In order to be considered for the 1954–55 academic year, applications for the predoctoral fellowships, which include first year, intermediate, and terminal year fellowships, must be received in the Fellowship Office by January 4, 1954. Applications for postdoctoral fellowships must be received by December 15, 1953.

Detailed information and application forms may be obtained from the Fellowship Office, National Research Council, 2101 Constitution Avenue, N. W., Washington 25, D. C.

CANCER RESEARCH SCHOLARS

The Committee on Growth of the Division of Medical Sciences, acting for the American Cancer Society, is accepting applications for grants for scholars in cancer research. These awards are designed to bridge the gap between the completion of fellowship training and the period when the young scientist has thoroughly demonstrated his competence as an independent investigator.

Applications are accepted from institutions only, each of which may submit more than one candidate's name. The institution receives a grant of $18,000, payable over three years, for each scholar selected, as a contribution toward his support, his research, or both. Applications should be submitted by institutions in behalf of candidates before January 1, 1954.

Application blanks and additional information may be obtained from the Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Avenue, Washington 25, D. C.

INTERNATIONAL RELATIONS

INTERNATIONAL COUNCIL OF PHARMACOLOGISTS

During the Nineteenth International Physiological Congress at Montreal, August 31–September 4, a meeting open to all pharmacologists attending the Congress was held at McGill University. At this meeting it was decided to set up a council of seven members from seven different nations to look after the interests of the pharmacologists at future international congresses, to explore the possibility and desirability of affiliating with the newly formed International Union of Physiological Sciences, to collect and distribute information about the activities of pharmacological organizations, and to perform such other functions as might seem necessary and advisable. The following council members were elected: Daniel Bovet (Italy), J. H. Burn (England), C. Hermans (Belgium), K. O. Möller (Denmark), E. Rothlin (Switzerland), C. F. Schmidt (United States), and H. Weese (Germany). The council subsequently selected Dr. Heymans as President, Dr. Schmidt as Secretary, and adopted the name International Council of Pharmacologists.

INTERNATIONAL UNION OF PHYSIOLOGICAL SCIENCES

The International Union of Physiological Sciences was organized by official delegates from the physiological societies of seventeen countries on September 2, 1953, at a meeting held during the Nineteenth International Physiological Congress in Montreal. The Union replaces the Permanent Committee of the Congress, established at Basel in 1887.

The delegates elected a council of eleven members from the countries participating in the organization of the Union. The Council in turn selected Charles H. Best, University of Toronto, as its President and Maurice B. Visscher, University of Minnesota, as its Secretary. The other members of the Council are E. D. Adrian (England), K. M. Bykov (USSR), C. Heymans (Belgium), B. A. Houssay (Argentina), Y. Kuno (Japan), E. Lundsgaard (Denmark), A. Mayer (France), A. von Muralt (Switzerland), and H. H. Weber (Germany).

The Council was instructed by the Assembly of the Union to complete arrangements for adherence to the International Council of Scientific Unions and to the Council for International Organizations in the Medical Sciences. The Council was also instructed to initiate action looking toward improvements in the abstracting and indexing of literature in the physiological sciences on a worldwide basis.

The Union will assume the responsibility of organizing future International Physiological Congresses, encourage the promotion of such other international congresses as may be needed for the advancement of the biological sciences, and will take all actions which will contribute to the development of the physiological sciences.

INTERNATIONAL SCIENTIFIC RADIO UNION

A joint meeting of the United States and Canadian National Committees of the International Scientific Radio Union (URSI) in collaboration with the Professional Group on Antennas and Propagation of the Institute of Radio Engineers (IRE) was held in Ottawa, Canada, October 5–8.

Some sixty scientific reports and addresses were given in eleven separate half-day sessions. The program was devoted largely to the special interests of four National Commissions under the headings: Measurement Methods and Standards, Ionospheric Propagation, Terrestrial Atmospherics, and Radio Astronomy.

Welcoming addresses were presented by E. W. R. Steacie, President of the National Research Council of Canada, and by O. M. Solandt, Chairman of the Defense Research Board of Canada.

INTERNATIONAL CONFERENCE ON THEORETICAL PHYSICS

Under the sponsorship of the Science Council of Japan an International Conference on Theoretical Physics was held in Tokyo and Kyoto from September 15 to 23. Invitations to the Conference were issued by Naoto Kameyama, President of the Science Council of Japan.

Discussions at the Conference centered around the theoretical aspects of nuclear science and the solid state. Among the topics treated were cosmic rays, nuclear forces, mesons, V-particles, field theory, intrinsic magnetization, molecular physics, crystal dislocations, dielectrics, color centers, superconductivity and properties of metals.

Arrangements for the Conference were carried out under the direction of Masao Kotani, professor of physics at the University of Tokyo, with the cooperation of the International Union of Pure and Applied Physics (IUPAP) and its President, N. F. Mott, professor of physics at the University of Bristol, England. Active collaborators in the United States were J. C. Slater, Massachusetts Institute of Technology, and J. A. Wheeler, Princeton University, both Vice Presidents of IUPAP and members of the United States National Committee of the Union. As Chairman of the Japanese National Committee of the Union, Dr. Kotani was host at a meeting of the Executive Committee of the Union, which was held in connection with the Conference.

The President and presiding officer of the Conference was Hideki Yukawa, Nobel Laureate and professor of physics at Columbia University. Foreign guests numbered about fifty, approximately half of whom were from the United States. Others from abroad came chiefly from Europe and Great Britain.

INTERNATIONAL HYDRAULICS CONVENTION

The Minnesota International Hydraulics Convention, which combined the fifth plenary meeting of the International Association for Hydraulic Research and the second separate meeting of the Hydraulics Division of the American Society of Civil Engineers, was held at the University of Minnesota, September 1–4. Scientists and engineers from eighteen countries attended.

Papers presented at the convention dealt with the following geophysical aspects of hydraulics: *a*) basic relationships of sediment transportation by flowing water; *b*) density currents; *c*) air entrainment by flowing water; and *d*) waves, beach erosion, and the hydromechanics of shore structures. The Technical Proceedings of the Convention, comprising 49 papers, illustrated by diagrams, charts, and photographs, were published prior to the opening of the meetings. Copies may be purchased from the Secretary of the Minnesota International Hydraulics Convention, St. Anthony Falls Hydraulic Laboratory, Minneapolis 14, Minn.

The International Association for Hydraulic Research, at its plenary meeting, adopted a new constitution and elected the following officers: Lorenz G. Straub (United States), *President;* Pierre Danel (France), A. N. Khosla (India), and G. de Marchi (Italy), *Vice Presidents;* J. Th. Thijsse (The Netherlands), *Secretary.* Members elected to serve on the Association's governing Council, along with the officers, were: Claude Inglis (England), Bo Hellstrom (Sweden), M. Bayer (Czechoslovakia), Arthur Ippen (United States), L. Tison (Belgium), Koichi Aki (Japan), and Ali Mohsin (Pakistan). The next plenary meeting of the Association will be held at Delft in the Netherlands in September 1955.

EIGHTH PACIFIC SCIENCE CONGRESS

The Eighth Pacific Science Congress will be held on the campus of the University of the Philippines in Quezon City, November 16–18, under the auspices of the Republic of the Philippines and the National Research Council of the Philippines. The Organizing Committee for the Congress is composed of a distinguished group of Philippine scientists under the presidency of Dr. Vidal A. Tan, Chairman of the National Research Council and President of the University of the Philippines. The Secretary-General is Dean Patrocinio Valenzuela of the College of Medicine of the University of the Philippines.

The scientific program for the Congress will include section meetings for the presentation of papers in the fields of geology and geophysics, meteorology, oceanography, zoology, botany, soil resources, forestry, agriculture, anthropology, public health, nutrition, and the social sciences. In addition, there will be general symposia on such subjects as rice enrichment, plant geography, typhoons, reforestation, museums, and international organizations. A special symposium will be sponsored by UNESCO on the subject of physical and biological oceanography.

United States participation in the Congress is being organized by the Pacific Science Board of the National Academy of Sciences–National Research Council which adheres to the Pacific Science Association on behalf of the scientists of the United States. Harold J. Coolidge, Director of the Board, is handling arrangements for this participation, including the task of obtaining transportation for members of the United States delegation.

It is estimated that approximately seventy-five American scientists will attend the meetings. Ten of this number have been designated as delegates of the United States Government and twenty-five, including the ten Government delegates, have been appointed to represent the National Research Council. Knowles A. Ryerson of the College of Agriculture of the University of California, one of the U. S. Commissioners and Chairman of the Pacific Science Board, will be Chairman of the delegation. Other members are: Fred Eggan, University of Chicago; W. McD. Hammon, University of Pittsburgh; E. M. Irving, U. S. Geological Survey; G. P. Murdock, Yale University; R. C. Murphy, American Museum of Natural History; C. E. Pemberton, Hawaiian Sugar Planters' Association Experiment Station; C. F. Richter, California Institute of Technology; A. F. Spilhaus, University of Minnesota; T. G. Thompson, University of Washington.

RECORD OF MEETINGS

July

1–3	Symposium on Radiation Chemistry, *New Hampton, N. H.*
2	Program Committee, Agricultural Research Institute, Chicago Illinois.
6	Informal Conference on Education and Training of Highway Engineers
15–16	Committee on Battery Additives Committee on Undersea Warfare
16–17	Committee on Ship Structure
17	Committee on Control of Deterioration
20	Committee on Ship Structure
29	Concrete Division, Department of Materials and Construction, Highway Research Board, *Columbus, Ohio* Committee on Flame and Thermal Protective Combat Clothing, *Philadelphia, Pa.*
31	Bituminous Division, Department of Materials and Construction, Highway Research Board, *St. Louis, Mo.*

August

6	Program Panel, National Committee on the International Union Against Cancer
11	Ad Hoc Committee on Naval Guns Committee on Disaster Studies
13	Executive Committee, Committee on Indigenous Strains of Maize
14	Conference on Germ-free Animals
19	Operating Committee for Federal Construction Council
24	Arctic Regional Committee, International Geophysical Year
25	Antarctic Regional Committee, International Geophysical Year
26	Committee on Foods, Subcommittee on Radiation Sterilization
27	Committee on Control of Deterioration

NEW PUBLICATIONS

Air Entrained Concrete: Properties of Air Voids and Service Record of Pavements. Highway Research Board Bulletin No. 70. Academy–Council Publication 261. 1953. 26 p. $0.45.

Atlas of Tumor Pathology. Section VI, Fasc. 21, *Tumors of the Stomach,* by Arthur Purdy Stout. 1953. 104 p. $1.75. Washington, Armed Forces Institute of Pathology.

Atoll Research Bulletin. No. 18. Pacific Science Board. National Research Council. July 1953. 190 p.

Composition of Corn in the United States, 1946–1947. Academy–Council Publication No. 258. 1953. 26 p. $0.50.

Directional Channelization and Determination of Pavement Widths. Highway Research Board Bulletin No. 72. Academy–Council Publication No. 263. 1953. 53 p. $0.75.

Driver Characteristics and Accidents. Highway Research Board Bulletin No. 73. Academy–Council Publication No. 264. 1953. 60 p. $0.90.

Effect in Concrete of Pellet and Flake Forms of Calcium Chloride. Highway Research Board Bulletin No. 75. Academy–Council Publication No. 268. 1953. 20 p. $0.30.

Glossary of Terms in Nuclear Science and Technology. Section 1, Physics, (formerly *General Terms).* New York, American Society of Mechanical Engineers, 1953. 62, xix p. $2.50.

Investigation of Wind Forces on Highway Bridges. Highway Research Board Special Report No. 10. Academy–Council Publication No. 272. 1953. 32 p. $0.60.

On Using Self-Contained Underwater Breathing Apparatus, by Walter A. Hahn and Christian J. Lambertsen. Academy–Council Publication No. 274. 1953. 19 p. Free.

Origin and Destination Surveys: Methods and Costs. Highway Research Board Bulletin No. 76. Academy–Council Publication No. 269. 1953. 72 p. $0.90.

Relationship Between Chemical Structure and Toxic Action on Rats, by James B. DeWitt, Ervin Bellack, Clarence W. Klingensmith, Justus C. Ward, and Ray Treichler. *Relationship Between Chemical Structure and Rat Repellency,* by Ervin Bellack, James B. DeWitt, and Ray Treichler. Chemical–Biological Coordination Review No. 5. 1953. 156 p. $1.75.

Sixth Annual Report, Pacific Science Board, 1952. National Research Council. 1953. 87 p.

Soil Temperature and Ground Freezing. Highway Research Board Bulletin No. 71. Academy–Council Publication No. 262. 1953. 127 p. $1.80.

Status Report on Standardization of Radionuclides in the United States, by George G. Manov. Academy–Council Publication No. 270. 1953. 20 p.

Table of Dielectric Constants and Electric Dipole Moments of Substances in the Gaseous State. National Bureau of Standards Circular No. 537. Washington, Government Printing Office. 1953. $0.20.

Traffic Accident Studies. Highway Research Board Bulletin No. 74. Academy–Council Publication No. 265. 1953. 60 p. $0.90.

Twenty-five Years of Sex Research: History of the National Research Council Committee for Research in Problems of Sex, 1922–1947. By Sophie D. Aberle and George W. Corner. Philadelphia, W. B. Saunders Co., 1953. 248 p. $4.00.

Notice of Academy Meetings

NATIONAL ACADEMY OF SCIENCES

Autumn Meeting, Massachusetts Institute of Technology, November 9-11

NATIONAL ACADEMY OF SCIENCES–NATIONAL RESEARCH COUNCIL

Governing Board, Washington, D. C., October 11

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